

MICROPOLIS CONTROLLERS

by David A. Land
10020 Fontana, Overland Park KS 66207

Back in min-August, Gene Riding of San Diego called me to ask about some problems he was having with motor turn-off modifications in a system containing 1015 drives with both Rev A and Rev B electronics boards. In addition, Gene wanted to add an 1115 drive to his system: was there any way to make the whole thing work together? I finally got around to researching this and I came up with an answer and a new hardware fix which I thought I would share with MUG.

The Problems

The two problems which must be addressed if you have decided to install the motor turn-off modification on your S-100 FD Controller are:

1. Making sure that all of the drives still center diskettes properly.
2. Getting your operating system to tolerate the modified mode of operation.

The first problem is peculiar to Revision A electronics boards for the 1015 (single) and 1053 (dual) drives. Without a signal from the S-100 FD Controller, these drives won't spin under any circumstances. This keeps newly-inserted diskettes from centering properly. The fixes provided by Micropolis for this involve modifying these boards so that the drives always spin - even without a signal from the disk controller. This solves the centering problem, but really defeats the motor turn-off feature for these drives. However, they will be compatible with a modified S-100 FD Controller.

The next problem is that your operating system has to operate differently with the motor control in place. Normally, either a drive is READY to read or write when selected or it is not. But with motor control, a NOT READY condition may be temporary - the drive may have just dozed off and will become READY a second or so after being awakened by the SELECT signal.

Now MDOS, being user-friendly (and not having anything else better to do), will wait patiently for up to several minutes for a selected drive to become READY. When the drive finally responds, everything will proceed normally as if nothing extraordinary happened. If you are running BASIC and the drive is truly not ready, an error message will be returned, and the program will be given a chance to recover. So if you're using MDOS, no problems!

But CP/M is not so easy to get along with. We all know that CP/M delights in catching its users committing even the slightest faux pax, and then responding with a triumphant (and irrecoverable) "BDOS ERR ON B..."! And woe be unto the user of Version 2 who makes his diskette become visibly "not ready" ... he will be stricken with the spiteful "automatic write protect". I never understood this "feature": its almost like a little kid saying "you didn't talk to me, so I'm not going to talk to you either ... ever again!"

Vector Graphic introduced motor turn-off as a feature in their products concurrently with the introduction of (I believe) CP/M Version 2.1. I use CP/M Version 2.2 on my system, which used to be a Vector System B (before I added the second printer, camera, home-brew speech synthesizer, etc.). This version of CP/M had a BIOS which tolerated a delay between SELECT and READY ... but not too much of a delay. To make this work all the time, Micropolis came up with a modification to cut the delay time between motor turn-on and READY in half.

This works fine for 1015s and 1053s, but can't be done on the 1115s (the timing is all inside a microprocessor chip). To get around this problem, I have designed a modification which works on a different principle: the drives are always READY (if selected), but no sector pulses occur until the motor is up to speed. This is another S-100 FD Controller modification, so you only have to do it once per system.

I have also tried the various motor turn-off modifications with Micropolis' OSM, and none of them work properly. The reason for this appears to be that OSM is sensitive to the timing between sectors and, since it has several dozen other things to do concurrently (it is multiprogramming and multitasking), it can't be hung up waiting for a mere floppy disk to come up to speed.

The Solutions

The first and most obvious solution is the old Chinese (Japanese?) philosopher's: "If it hurts to do that, don't do that!" Why is it that you need the motor turn-off modification? Do you really see a difference in diskette wear with it in? With no motor turn-off, everything is compatible with MDOS, CP/M, and OSM as-is!

The second solution, which will work for everyone using (at least) Vector Graphic Version 2.20 CP/M and/or MDOS, is as follows:

1. Install the standard Micropolis or Vector Graphic motor turn-off modifications on your S-100 FD Controller.
2. Modify any 1015 Rev A or 1053 Rev A drives you have to make the motors run whenever the door is closed by connecting the MOTOR ON signal to ground per Micropolis Product Bulletin #FD-0014.
3. Instead of changing the READY timing circuits on all of your drives, install the Land Ready Circuit Modification on your S-100 Controller. This will accomodate mixtures of Rev A and non-Rev A 1015 drives, and should also take care of 1115 drives (I don't have one to actually try).

The Land Ready Circuit Modification

For those of you who have access to an S-100 FD Controller schematic, I'll describe the theory behind this modification. Normally, the 74LS257 at location C5 passes the RDY signal from the drive back to the CPU when status is read. The modification removes the RDY line from the status sent back to the CPU and substitutes a constant "TRUE" signal (always ready). After the CPU has

determined that the drive is READY, the next order of business is to find the appropriate track and sector on the drive. To prevent this from happening before the selected drive is truly "ready", the SECP (sector pulse) signal from the drive is inhibited until the RDY signal from the drive goes true.

It is important that this be done without changing the timing of the sector pulses, as all data is located from the leading edge of the sector pulses. To accomplish this, the RDY line is substituted for the PU4 signal at the Sector Pulse De-Glitch 74LS221 O/S at location C2. Because the O/S is edge-triggered, the circuit will pass the next whole sector pulse which occurs after the RDY signal from the drive becomes TRUE. The operating system is happy because it thinks that the motor turn-on delay is inter-sector delay, and it has been programmed to wait until it sees a sector pulse to do anything.

To make this modification, use a small and sharp pair of sidecutters to carefully cut pin 10 of the chip at C5 and pin 3 of the chip at C2. Use care not to damage the case of the chip, and make the cut in such a way that you can solder a wire onto the cut stubs of C5-10 and C2-3. Also make sure that no wire chips are shorting out printed circuits where you have made the cuts. Now solder a #30 jumper wire from the stub C2 pin 3 to B7 pin 2. Install a second #30 jumper wire from the stub C5 pin 10 to C5 pin 14. That's it!

Test your work by plugging in your controller and booting up CP/M. Let the motor turn off and try to use the DIR command. If you get a directory instead of a "DBOS ERR...", you've got it made. I've confirmed that this works in a system using a mixture of drives containing and not containing the RDY timing modifications, and also makes a drive without the RDY timing mods instantly compatible with motor turn-off under CP/M.

Realizing that this is still experimental, for those who are adventurous enough to want the modification but not adventurous enough to want to install it themselves, I'll be happy to do the installation and test the modification on your S-100 FD Controller which has previously been modified for motor turn-off for \$10. To help amortize the shipping and downtime necessary to do this, I'll align the controller while I've got it for an additional \$15 (\$5 off our normally-cheap \$20 price). And just because I'm curious to see how it actually works with 1115s, I'll throw in the modification for FREE with any 1115 alignment job through January 30. Just send me your S-100 FD Controller with the drive.

I'd like to hear about any positive or negative results anyone else gets using this fix on different systems.

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MDOS SOFTWARE AVAILABLE

by Lynn Rudow

Last month's response to my little sale of hardware and CP/M software was pretty good. Now, I don't want you MDOS users to be left out in the cold - so,

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this month it's MDOS software. There isn't much commercial software for MDOS, but there may be something you'd like to have. Take a look and call me. The 1015 drives are still available as in last month's issue.

I also thought some of you might be interested in purchasing spare parts, or manuals, and have included some of the more commonly ordered parts.

As before, prices do not include shipping. Visa/Master Card are 3% higher.

MDOS Software

ALLEN
mdos pds extension 42.00

BONJOEL
psort 25.20
inventory one 42.00
database two 42.00
modifile/modimath 42.00
react 42.00
wamsort 42.00

DATASMITH
bookkeeping 150.00
payroll 279.30
multimerge 25.20
variable lister 25.20
smash 25.20
utility set 126.00
text conv 63.00
sys lister 25.20
data manager 378.00

SYSTEM/Z
bem 51.87
sort/a 59.85
xref 67.83
crunch 27.93
auto/exec 31.92
dsm 51.87
utl 75.81
bcompare 27.93
basic/z 85.00
trII 43.89
edit/s 35.91

SHAW LABORATORIES
microp enhance kit 22.00
utilities 37.80

MICROPOLIS
MDOS vs. 4.0 75.00
MDOS vs. 4.1 100.00

Micropolis Hardware Parts

MDOS Users Manual 50.00
1015 Maint Manual 35.00
1015F/16F Maint Manl 35.00
1035/55 Maint Manl 35.00
All other 1000 MM 50.00
Align Disk ss/ds 50.00/100.00
Diagnostic Disk ss 50.00

Mag Lube 4.50
Head Pads .50
Belts 5.75
Motor Tach Assy. 38.00
Clamp Assy. 10.21
Spindal Assy. 35.00

I haven't listed all the parts since it would take this entire newsletter to do so. If there is something you want, if I don't have it, I can get it.

Happy Holidays.

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MICROPOLIS AT 6 MHZ

by Mel Dalton

7826 W. 80th St., Playa del Rey CA 90291 (213) 823-6421

A few months ago I received a letter from Julius C. Martin which reminded me that I had promised Buzz to document the conversion of CP/M to 6 Mhz and send him the results for publication. I did the conversion and have used it on CP/M 1.411 for 3 years and then bought a CP/M 2.20B (the Lifeboat version) and modified it in late 1984. CP/M 2.2 has been used to generate a working version of CP/M 3 at 6Mhz. Unfortunately, all of this now has to be documented for publication. So here goes.

Fortunately, Lifeboat Associates choose to copy (almost verbatim) the disk drive routines from MICROPOLIS Users Manual Section 6. HSCPM22, an assembly language file available on MUG CP/M Library Disk 112, is the required overlay for Lifeboat CP/M 2.20B. HSCPM14, on the same Library Disk, is the overlay for Lifeboat CP/M 1.411. This article, as well as listings of the two above files, and a listing-3 for the CP/M 1.411 DISKCOPY, are also on the Library Disk. Use them as follows (at 2 mhz.):

1. Use MOVCPM to set size of CP/M you want.
2. Set MSIZE equate at beginning of Listing 1 or 2 to size of CP/M.
3. Add your CBIOS (JMP table and source code) as shown near end of HSCPM14 or HSCPM22 (listings 1 and 2 of the library version of this article).
4. Assemble combined code with ASM or MAC and save HEX file.
5. Use SYSGEN to place CP/M in memory from 900h to 2900h and then
SAVE 40 CPMxx.COM.
6. Use DDT or SID to recall CPMxx.COM to memory and then I and R commands to insert HEX file from step 4 into memory image.
7. Exit DDT with GO and call SYSGEN.
8. Skip Source request and specify a Destination that is a test disk.
9. Insert your test disk in drive A, switch your computer clock to 4-6 Mhz. and attempt to boot the disk.
10. Test by loading known good programs from various disks. Also try SAVE and PIP.

Now for the pitfalls in the foregoing procedure. In step 6, be very careful in calculating the offset used with the R command. If it is wrong, the patch will overlay the wrong part of CP/M. List SYSGEN image locations starting at 2600H (CP/M2.2) or 2500H (CP/M1.4) BEFORE you do the overlay with R. Note the addresses in the jump table. AFTER the overlay is complete, repeat the list. Now the jump addresses should be different. IF NOT, look 100h plus or minus or 1000h plus or minus from the correct location. If you find the correct jump table, then adjust your offset in the R command. Then GO and repeat step 6 completely.

Also, be aware I have never tried these changes on a Z80B. If the clock times required to execute the instructions used are different than shown in the comments, then some adjustments may be needed.

Do not try to run 1.411 with drives which use controller B. These drives only rotate when selected, and require 2.2 or better at ANY speed. However, I have run controller A with 1.411 @ 6 Mhz. for over 3 years, so it does work.

If your CP/M 2.2 is NOT by Lifeboat then be forewarned that you will likely need changes to the overlay. If you are experienced as an assembly language programmer then an inspection of a DDT listing from the BIOS jump table at 2000h (SYSGEN image) should reveal how your version differs from the Lifeboat version. Good luck and have fun!

If you do want to run 1.411 at 6 Mhz. you will also need a overlay for DISKCOPY. The COPY program in 2.20B does not need any speed sensitive changes. The overlay for DISKCOPY is given in listing-3 of the saved version of this article on Disk 112. Proceed as follows:

1. Use ASM or MAC to assemble HSCOPY14.
2. Use DDT or SID to load DISKCOPY.COM into the TPA.
3. Use the I & R commands to overlay the HEX file from step 1.
(No offset is required with the R command in this case.)
4. Exit DDT or SID with a GO and then SAVE 7 HSCOPY14.COM.
5. Test by copying to a freshly FORMATED disk.

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MODEM PROGRAM, VG SPEED INCREASE, & MBASIC5 COMPARISONS

by Darrell Robinson

5846 Carmel Drive, Duncan, B.C., Canada V9L 4N7 (604) 748-6604

Modem Program

MUG CP/M Library Disk 112 contains a program named AMODEM, which is a simple modem/terminal driver program. It is easy to follow and shows good use of one method to initialize the 8251 USART.

VG Speed Increase

One day when I was playing with my Vector and my Northstar Horizon, I was comparing them for speed of operation. I was running Microsoft Basic 5.1 on both, and I know they are the same, because the Basic on the Northstar was ported from the Vector. I ran the program:

```
10 FOR A=1 TO 100
20 FOR B=1 TO 300
30 NEXT A
40 NEXT B
50 PRINT "DONE"
```

which took approximately 41 seconds for completion on the Vector, and 31 seconds on the Northstar. I felt that something was wrong, as both systems run

at 4MHZ on Z-80s. The problem with the Vector turned out to be the addition of wait states on the CPU board. This is an option selected by a jumper in the upper left corner of the Z-80 board, labeled jumper "B". The manual states that this jumper is shipped "not enabled", but my board (serial 302170) came with a trace connecting the pads. After I cut this trace and reinserted the board, the previous program ran in 32 seconds. What a change!

It should be noted that the memory chips need to be 300NS or better. If their speed is unknown, you can disable the wait state generation and do a memory test in the monitor mode. (MON>T 0000 DFFF) If the test shows errors, simply resolder the cut trace and redo the test.

MBasic5 Comparisons

Out of curiosity, I ran the same MBasic program a few different ways as shown in the following table.

MBASIC5 WITH 1 WAIT STATE	41 SEC
MBASIC5 NO WAIT STATES	32 SEC
MBASIC5 USING INTEGERS/NO WAIT	20 SEC
MBASIC5 COMPILED WITH BASCOM/L80	17 SEC
MBASIC5 COMPILED USING INTEGERS	1 SEC

This certainly shows that using integers wherever possible speeds programs up significantly.

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PIP CREATION OF A FILE FROM THE CONSOLE

by Steve Brandli

(Reprinted from the October 84 issue of the ABA Bulletin - AL Brandli and Associates, 3176 Pullman, Suite 103, Costa Mesa CA 92626, (714) 754-6363)

As a programmer at ABA, I've been asked to relay to you some tips each month that just might make your computing chores a little easier, and maybe even more enjoyable. If you have any questions or subject areas you would like me to address in this column, don't hesitate to get a message to me. I would like to know your interests.

This month I'd like to show you a trick for creating an ASCII text file without having to use (and more importantly, learn) a text editor (like SCoPe) or word processor (like Memorite). Most of you know that PIP is a utility used to copy one file to another. But did you know that you can use PIP to copy from one device to another?

PIP recognizes the symbol CON: to mean the console device. And if you tell PIP to transfer text from the CON: device to a file, for example

A>PIP FILENAME.EXT=CON: (cr)

it will assume you mean to read the keyboard and transfer what is typed to the file (FILENAME.EXT, in this case). PIP will transfer what you type until you enter an End-Of-File (EOF) character, which is a Control-Z.

Before I give you an example, let me give you two hints about this method. First, PIP will transfer EVERY character you press into the file. If you type a backspace to correct a mistake, PIP will copy the mistake, the backspace, and the correction into the file. This is not acceptable in most cases. Second, most applications expect a Carriage Return (cr) and Line Feed (lf) at the end of each line. To get these characters into the file, press both keys at the end of each line you type.

A good application (one that I use very often) for this shortcut is the SUBMIT utility (batch processor). You can create quick submit files using PIP as described above. For instance, the following will create a submit file that, when the command SUBMIT START is typed, will configure the printer on Extended CP/M systems and then run Memorate.

```
A>PIP START.SUB=CON: (cr)
CONFIG 1 (cr) (lf)
MEMORITE (cr) (lf)
control-z
```

Remember, make a mistake and you must start over! A control-z will stop the PIP command.

Try it and see what happens.

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EDITOR'S NOTES

by Buzz Rudow

Seems like there's always a problem, a worry, about what the Members want to do with this Group. When we started, most members were hackers. You had to learn about your computer and its language if you wanted to survive. The newsletter was an exchange of information. I didn't have to know all the answers. Fact is, most members knew more than I. Everyone had the same hardware for drives, controller, the same software for operating system, basic and assembly language.

Now the bulk of the membership is in Vector Graphic owners. Most people run CP/M. That's not too bad, in itself, but a problem arises when what I'm interested in (Basic/z, Spellbinder, & SuperCalc) isn't what the members are interested in (Basic-80, Memorate, & ExecuPlan). The problem is intensified when members aren't writing articles on the things that interest them.

It still seems obvious that this group has some common interests. For almost all of us, the 16-hard-sector, 100TPI, 77-track disk sets us apart from the rest of the world. The ability of the MUG to supply public domain software,

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and either supply or convert commercial software to this unique format is a reason for existence. Perhaps another usefull service would be as a keeper of documentation. For all the out-of-print items, such as the SOL computer, the VG 8080 & Z80B boards, etc., the MUG could solicit copies of documentation and create a database which could in turn be copied for other member's use.

Operating documentation takes a bit more work. People have to tell of their experiences, problems, and successes. We've done a lot of that in the five-plus years that we've been around. One problem has been to remember what topics have been addressed, and what issue of the newsletter contained that story. I've been trying to put together a total index of all the newsletters.

So, if you have suggestions on what the newsletter can do for you, let me know. If you have figured out how the hardware and software of our systems works, tell us about it. If you've purchased hardware expansions or commercial software, write us a review.

The point is, and has always been, that the success of this endeavor (the newsletter, and the Group in general) is dependant on you members getting involved. The newsletter is meant to be a vehicle for sharing experiences. I don't have the expertise to tell it all.

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MUG LIBRARY UPDATES

There's quite a bit of new data for the library that I'm slow in processing. I realize that I've skipped disk 1911, which I'll show next month. The new set of MEX communications programs are also available on disks 1017, 1018, 1019 and 1020.

MUG CP/M Library Disk 1912, Revision 0, December 85 MISCELLANEOUS

NAME	TYP	RV	SZE	CAT	DATE	AUTHOR/DESCRIPTION
=====	===	==	===	===	=====	=====
AMODEM	ASM	00	004		1285	Robinson, D. - A simple terminal-to-modem program.
AMODEM	COM	00	002		1285	Robinson, D. - The command file of AMODEM.ASM.
BG	COM	00	018		1285	Robinson, D. - Backgammon with directions.
BMODEM	BAS	00	002		1285	McGinnis, D.
CATALOG	LBR	00	024		1285	Robinson, D. - A good disk catalog. Use LU310 to open library.
DASM	COM	00	010		1285	Robinson, D. - Desassembler
DCOPYPAT	ASM	00	006		1285	
DISK7	COM	00	004		1285	McGinnis, D.
FINDBAD	COM	00	002		1285	McGinnis, D.
FINDBAD54	COM	00	002		1285	Robinson, D. - Bad disk sector lock-out program. Doesn't harm existing data.
FIX	COM	00	036		1285	McGinnis, D.

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FORM	LBR 00 012	1285 Robinson, D. - Assembler source code Formatter. Use LU310 to open.
HSCPM	DOC 00 018	1285 Dalton, M. - Article on Micropolis at 6MHZ. See December 85 MUG Newsletter.
HSCPM14	ASM 00 008	1285 Dalton, M. - Micropolis at 6MHZ for CP/M 1.4.
HSCPM22	ASM 00 008	1285 Dalton, M. - Micropolis at 6MHZ for CP/M 2.2.
LBR	DOC 00 002	1285 Robinson, D. - A general description of library utility uses.
LU310	COM 00 020	1285 Robinson, D. - Library utility. Opens, creates, modifies.
LUDEF3	DOC 00 008	1285 Robinson, D. - A good description of the use of LU310.COM.
MDM727	COM 00 020	1285 McGinnis, D.
MLOAD	COM 00 004	1285 McGinnis, D.
NSWEEP	LBR 00 032	1285 Robinson, D. - Incorporates Squeeze and UnSqueeze. Copies, deletes, tags, renames, views, etc. Use LU310 to open.
PIP	COM 00 008	1285
RCPMLIST	20 00 022	1285 A rather old list of Remote CP/M (modem accessible) sites.
SD	COM 00 004	1285 McGinnis, D.
SORT	ASC 00 006	1285 Rudow, B. - The Basic/z sort program for files larger than memory. See October 85 MUG newsletter.
SORT	BZS 00 004	1285 Rudow, B.
SORTDIR	COM 00 002	1285 McGinnis, D.
STAT	COM 00 006	1285
USQ	COM 00 002	1285 McGinnis, D.

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CLASSIFIED

WANTED - Bitstreamer II Board. Also want Micropolis Basic Language Manual or copy, and back issues of Microsystems magazine. Finally, I have some 16K RAM chips, and am having a difficult time finding data sheets for them. The two versions are MCM4517P15 and MB8118-12, both 16-pin dynamic types. Can anyone help with a pin-out? I have access to a few hundred of these at a very good price.

Darrell Robinson, 5846 Carmel Drive, Duncan, BC., Canada V9L 4N7 (604) 748-6604

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FOR SALE - Two Vector Graphic 3005s. Each with 128K RAM, 5-Mbyte hard disk, Extended CP/M 2.54. Also includes ExecuPlan, all Peachtree Accounting, and Macro Assembler. \$975 each.

Chris Risley (617) 277-6277.

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FOR SALE - Two Vector Graphic Model 4/40s. Each with 128K RAM, 10-Mbyte hard

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disk. Two Vector Graphic Model 4/00 intelligent workstations. Two Vector Graphic (NEC) Model 7700 printers.

All of the equipment was purchased new in December 1983. Due to loss of our local dealer and associated service, we are interested in selling these items of equipment.

Call (417) 667-3318 for further information, or write Kendall R. Vickers, Attorney at Law, 223 W. Cherry St., P.O. Box 287, Nevada MO 64772-0287.

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FOR SALE - Vector 48K RAM board with manual. Working? \$25.

Digital Research RMAC Macro assembler for CP/M-80. On Micropolis/Vector Graphic diskette, with manual. \$45.

Hawkeye Grafix Dual Controller BIOS for Micropolis. Includes a configured diskette which will boot on a 56K MZ and run a Tarbell controller. \$125.

Gary A. Van Cott, P.O. Box 1879, Grafton VA 23692. (804) 898-3680 evenings and weekends.

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FOR SALE - Two Vector Graphic 3005s, consisting of monitor with non-glare screen, 1-600K floppy, and a 5-Mbyte hard drive. Units are two years old, have nothing wrong with them, and are complete with the latest operating system. Asking price is \$1950, or highest offer.

John K. Fulling, 1717 South U.S. 31, P.O. Box 2501, Greenwood IN 46142, (317) 888-3321.

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FOR SALE - Vector Graphic MZ B and monitor. Working. Manuals, disks, Wordstar and Peachtree accounting programs. Asking \$600.

Bill Eisenreich, 1410 Gibsonwood Rd., Baltimore MD 21228, (301) 788-2666.

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FOR SALE - Vector Graphic System B with Vector MP dot matrix printer and software. \$750 or best offer. Also have extra (brand new!) Vector MP dot matrix printer with ROM, cables, etc. \$125 or best offer.

Doug McGinnis, 3850 Crescent Dr., Santa Barbara CA 93110, (805) 569-0898 evenings.

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FOR SALE - Total Accounting Partner software package for CP/M. Comprised of General Ledger, Accounts Receivable, Invoicing, Accounts Payable, Purchase Orders, and Payroll. \$150.

Guy Cusunzano, (201) 431-1505.

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FOR SALE - COMPAL computer with Micropolis 1053-IV dual floppy drives. Inoperative. It is believed that the video board is bad, all others (CPU, memory, controller, drives) are good. Includes MDOS 4.0/4.1 (yes, it runs single- or double-sided MDOS), a master programs disk, Textwriter; CP/M 2.2 (also runs single- or double-sided) with two COMPAL accounting programs and dBase II; all hardware and software documentation.

Will sell all for \$400, or split computer from controller, floppies, and software, at \$200 each.

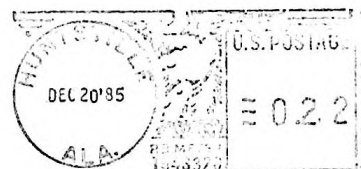
Daryl, Benedictine Monastery, Paco NM 87552, (505) 757-6600.

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* *
* For Assistance with general information, MUG/Vector Graphic, DAMAN hardware *
* & software, Micropolis Basic, Basic/z, Micropolis drives & Micropolis parts-*
* *
* Call Lynn at (205)881-1697 during the Central Times of 9 AM to 5 PM. Buzz *
* is sometimes around in the evening (Lynn will know) and from 9 - 12 on Sat. *

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